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INFLUENCE OF HEREDITY AND ENVIRONMENT UPON RACE IMPROVEMENT

AN INTRODUCTORY PAPER UPON THE SIGNIFICANCE OF THE PROBLEM

By CARL KELSEY, PH.D.,
Professor of Sociology, University of Pennsylvania, Philadelphia.

It is the purpose of this paper to give a bird's-eye view of the fields which are to be studied in detail in the other papers. As far as possible it must correlate these various studies and show the common aim. To do this without, to some extent, trespassing on others' territory is impossible. For such overlapping the indulgence of the readers and the writers is asked. It should also be remembered that in seeking to draw a large sketch the detailed evidence is necessarily omitted. Though many seemingly dogmatic statements are made, I believe they could be supported by an abundance of facts if space permitted.

One of the most eminent of living biologists has recently written:⁴ "It is well known that the sociological inquiries of Malthus as to human population influenced Darwin, Wallace and Spencer, and that the concept of natural selection in the struggle for existence came to biology from above rather than from within its own sphere. The same is true of the fruitful idea of division of labor, of the general idea of evolution itself and of others—they came to biology from the human social realm."

"To keep to the concept of selection for a moment: it was applied to plants and animals, it was illustrated, justified, if not demonstrated, and formulated; and now, with the imprimatur of biology it comes back to sociology as a great law of life. That it is so we take for granted, but it is surely evident that in social affairs, from which it emanated as a suggestion to biology, it must be reverified and precisely tested. Its biological form may be one thing, its sociological form may be another."

I have given this quotation for several reasons. It shows us clearly that the subjects under discussion in this volume are in

⁴Thompson, "Heredity," p. 511.

part biological, in part sociological. These fields have much in common, are often interdependent, yet are separate. Many analogies exist, but laws in one are not *ipso facto* to be considered laws in the other. Clear thinking then demands that the two fields shall be sharply defined. Social theory gave a great impulse to biological research. Biology now places at the disposal of social workers a mass of knowledge as yet little appreciated which is, however, destined to revolutionize social programs.

A discussion of "the comparative importance of heredity and environment" is likely to be very misleading. The problem is not to determine which is more important, but to discover the contribution each makes to the body politic. I know of no way of comparing the relative importance to a given man of heredity and environment any more than I know how to determine whether the stomach or the brain, whether food or air, is more important. Essentials cannot be compared. They can only be discovered and the functions of each studied. It can easily be shown that evils arising from bad heredity are not affected by changing the environment and *vice versa*. A feeble-minded person remains feeble minded whether he vegetates in an almshouse or is cared for at Elwyn—nor does any change affect his children. The children of athletes are not different from those of scholars provided the stock be the same; nor are those descended from church members or heretics, saints or sinners, the stock again being the same, and this is true, popular opinion to the contrary notwithstanding.

At the outset clear thinking is difficult because of the different, often conflicting, meanings given to words. When a college senior defines animism as belief in the Father and Son, but not in the Holy Ghost, we smile. Our feeling is a bit changed when the head of an institution for children on being asked if he favored the indenture system, replied, no, that he preferred manual training. But what progress can be made when even physicians confuse congenital with inherited characters and do not see that the transmission of a disease like syphilis from parent to child does not mean that the child inherited the disease?

In my judgment, we should limit the term inheritance to those physical characters which are determined, we know not how, in the germ cells. These germ cells unite and growth begins. All modifications, whether caused by some poison, say alcohol; by

disease, say syphilis; by accident, by over or under nutrition, are technically known as *acquired characters*. Congenital, then, refers merely to the fact that certain characters exist at birth—it tells nothing as to their origin. Contrary, again, to popular judgment, biologists now almost unanimously believe that such acquired characters or modifications have no effects on germ cells later produced by the individual, and therefore produce no change in the next generation. Be it remembered that "acquired characters" do not refer to any of the features which may have come to the human race through inborn variations. Our language is at fault. When we say human race has *acquired* given characteristics we refer to *inborn* not to "acquired characters." Failure to make the distinction is a fruitful source of error for those not trained in biology. Space prohibits the discussion of this most important point. It must suffice to say that, while no one knows what causes the offspring to vary from the parents, we now know that certain things formerly held all-important are of no effect.

At this very point a new difficulty arises. Heredity is often used in the sense of social heredity. We say a child inherits the customs, ideals, learning—the whole culture of the parent group. A little reflection makes clear that these are social inheritances, not physical—quite as important, but different. Nothing is more obvious than that the children of certain groups are better housed, better fed, better trained and educated than those of other groups. That, on the whole, these are to be leaders is evident. So quick are we to jump at conclusions, however, that the world-wide assumption has been that these children have a better line of physical descent. Is this a self-evident fact? May not their superiority be due to their environment, not to their heredity? Investigation, not argument, must furnish the answer.

The question to be considered in this connection is whether the marriages of human beings have been consummated on physical or social grounds. If the evidence shows that social, political, financial considerations have determined the bulk of the matings, then there is little reason to believe that better strains have been created and perpetuated. That they could be no biologist doubts, but social customs prevent. Bagehot somewhere says: "Man, unlike the lower animals, has had to be his own domesticator." Man has found it worth while not merely to tame, but also to carefully

breed the domestic animals. Unfortunately, it would seem, the suggestion that he might improve his own stock has received little consideration. The term "Eugenics" is hardly understood in America, though better known in England. Here is a vast field for study. I can only suggest that it is doubtful if it can be shown that during all historic time the human race has made any material change via the road of heredity.

Race is another hobgoblin. We all know what a race is, yet no one can tell where one race stops and another begins, physically—that is, legally we often accomplish the impossible. What are race differences, physical or social? What are the effects of race crossings? These are tremendously important questions for us to-day. In many states certain inter-race marriages are prohibited by law. Why? Because of physical or social results? There may be important physical differences between the races. I know not. I only venture to state that no one has yet shown what they are. If this be so, then popular discussion should yield to scientific inquiry.

Race differences aside, the problem of maintaining a sound physical stock confronts us. For a century we have boasted, vainly, of our wonderful progress, of our physical as well as mental superiority. Suddenly we find our faith challenged. Anglo-Saxon in civilization we may remain, but not in stock. Our ancestors first "fell on their knees and then on the aborigines," and prevailed because of their superiority. Now their descendants claim that the inferior peoples of Europe are destroying them. How can such a paradox be explained? Can it be that the virtues of the old stock were due to the development caused by the outdoor frontier life? It must not be forgotten that the earlier immigrants found their opportunities in the open, while those coming to-day find theirs in the crowded industrial centers. The significance of this is more apparent when we reflect that every study shows that great groups of our people are living and working under improper conditions. In our haste we say that they come here from stocks of low vitality, but is it not possible that the trouble lies in our own social institutions? When it is found that the backward children in our schools are physically sub-normal better methods of instruction alone will not suffice. The serious problems of immigration are then apparently due to social differences rather than to inherited physical differences.

So far we have considered the problem from the side of heredity. Recognizing that there are many unsolved questions, it would seem clear that our first duty is the elimination of the unfit, that they may not become parents. Next comes the attempt to improve the race stock by paying some attention to biological factors underlying matrimony. Personally, I believe we are safe in assuming that the great majority of children in America are born normal and with average possibilities.

Normal growth requires more than mere adaptation to environment. Social progress in large measure consists in controlling the environment in ever-increasing measure. Contagious diseases no longer rank among the properties of the germ cells nor do we charge them to divine Providence. Knowing them, now, to be of bacterial origin, we attack them and conquer them one by one. But progress starts reaction against itself. There are those so affected by the statement that forty million bacteria may exist in a drop of milk that they prefer diseased milk to such knowledge. Prudery prevents the open and frank discussion of those venereal diseases which so vitally affect the human race. Such opposition must not prevail.

It is increasingly evident that the conditions of life and labor of the workers of the world—children, men and women—are of fundamental importance. Better a slow development than one purchased at the expense of the future efficiency of child laborers. Fatal to progress is the continued existence of large groups under conditions causing physical or mental breakdown. Self-evident, you say? Granted, by everyone in theory, but often denied in fact. Vested interests, private profit, selfishness are here the handicaps.

Evident, too, it appears to the student that many old social institutions must be speedily and perhaps radically changed to meet new conditions if continued prosperity is to be ours. Our schools must prepare the ninety-five per cent. for life, not the five per cent. for college, for instance. Here the handicap is conservatism.

In a word, we live and think too much in vicious circles. Men and women live and work under bad conditions. The children are poorly nourished and sadly neglected. Low ideals are inculcated—result, inefficiency, poverty, vice, crime. In another group opposite conditions prevail, opposite results follow. Popular opinion of the successful group says heredity—blood tells; that of the

other says environment, exploitation, lack of opportunity. I know of no better way of contrasting the philosophy of the so-called upper and lower worlds.

To such loose thinking an increasing protest is arising. Unconscious, perhaps, of its full significance, many of those now grappling with social problems are condensing their statement of causes into the one word, "maladjustment." In a word, we create the evil as well as the good. Nature is impersonal. To an increasing degree man determines. The race stock remains practically unchanged. Each generation starts on the same physical level. Are conditions such that physical strength will be conserved or exhausted? Will children become robust men and women or weaklings? Do social institutions provide opportunities or check ambition by some form of privilege?

In America we must face the issue. God cares no more for us than for other nations. The problems of vice, crime, poverty are ours. Only by intelligent study of the situation, only by effective coöperation in remedial and constructive measures can ultimate downfall be averted. As individuals we are helpless.

In my judgment the situation is hopeful. To realize that our problems are chiefly those of environment which we in increasing measure control; to realize that, no matter how bad the environment of this generation, the next is not injured provided that it be given favorable conditions, is surely to have an optimistic view. Shall not our ideal be, then, a sound body as the necessary basis of a sound mind, a healthy, progressive race?